JOB ANALYSIS

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GENERAL

Job analysis is a process used to identify the important tasks of a job and the essential competencies an individual should possess to satisfactorily perform the job. A job analysis may be used for multiple purposes. Some of the most common purposes are: determining class entry requirements; selecting individuals for employment; developing employee training plans; and developing performance evaluation measures.

There are multiple methods of conducting a job analysis. The methods vary depending on how information is collected, analyzed, documented and used. For the result of a job analysis to be useful the individual conducting the analysis needs to:

> ➢ understand why the analysis is being conducted;
> ➢ how to properly complete the analysis; and
> ➢ what the job requirements/competencies are.

Table 1 provides a brief description of job analysis methods, required resources, and advantages and disadvantages of the methods. More information on each method is available in the Job Analysis Manual published by the Division of Human Resources (DHR) of the Department of Personnel & Administration (DPA). These operational guidelines focus on the job analysis conducted for the purpose of employee selection.

Selection-oriented job analysis techniques focus on the difference between *workers within* the job or class to be analyzed. This contrasts with job analysis techniques for classification that focus on the difference between *jobs across* different classes. Both focuses are possible in a single job analysis, but considerably more time and resources are required for a multi-purpose job analysis than for a single-purpose job analysis. A selection-oriented job analysis should result in the development of valid selection devices and may be tailored to minimize job analysis time. A job analysis that produces a valid examination identifies worker characteristics which:

> ➢ distinguish superior workers;
> ➢ are not easily learned on the job; and
> ➢ are present to at least a moderate extent in the applicant pool.

The end result of a selection-oriented job analysis is an examination which will be used to select "the best qualified" individual for a position. The more directly the competencies link to the job tasks and duties, the more defensible the examination will be on the basis of content validity. It is critical the examination plan and examination(s) are not developed until <u>after</u> the job analysis is completed.

INFORMATION COLLECTED

When the job analysis is conduced two dimensions of information are collected. The two dimensions are <u>level</u> and <u>orientation</u> (job or worker). The level of information ranges on a continuum from the molecular to the global. Intermediate and more global information will be used in the selection-oriented job analysis techniques. Typically, a job analysis will cluster more molecular-level information under a

global label, which is called a factor.

The orientation of the information is the second dimension of information collected in job analysis. The *job-orientated* job analysis focuses on what is done, the tasks performed, the tools used or the work produced. A *worker-oriented* analysis focuses on the characteristics of the worker who does the work. These are often expressed as knowledges, skills, abilities and personal characteristics. In general, the *worker-oriented* job analysis provides the kind of information most suitable for selection, performance management and training. The *job-oriented* job analysis provides information most useful for classifying jobs and supporting salary programs.

COLLECTING INFORMATION

There are six basic techniques used to gather information about a job:
> literature review;
> direct experience;
> interviews;
> worker logs;
> questionnaires; and
> statistical studies.

Regardless of the method of job analysis used, the information/data collected requires at least an informal analysis and interpretation that is documented and formalized to be considered a bona fide method of job analysis.

CHARACTERISTICS OF GOOD JOB ANALYSES

Reliability
Reliability refers to the extent to which a process or a result can be replicated. A reliable job analysis procedure is one that provides essentially the same information; 1) when it is applied to the same job by another job specialist; 2) when it relies on a different sample of job experts; or 3) when it is applied at a different time.

Standardized job analysis methods demonstrate acceptable or high levels of reliability. Particularly high levels of reliability can be demonstrated for methods that rely on structured questionnaires, such as worker-oriented questionnaires, job inventories, or checklists. This is especially true if the structure of these instruments carefully controls the usage and meaning of the language.

Validity
Validity is the extent to which the analysis measures what it was designed to measure. It is a separate requirement from reliability. Reliability of a job analysis procedure does not guarantee its validity. By definition, the validity of a procedure depends on its purpose.

A job analysis can only be valid for selection if it identifies those factors that differentiate superior performance from barely acceptable performance. A job analysis technique that simply describes what is done and does not evaluate levels of performance is not valid for development of an examination. Only job analysis techniques which evaluate the level of performance on the job can produce valid examinations.

Quantification

The collection of quantifiable data has many advantages. Because of these advantages, quantification is an important aspect of most major job analysis methods, but still allows room for judgment. Statistical methods and concepts are tools that can assist in and provide a basis for interpretive judgments, but the HR professional remains responsible for determining what is meaningful and significant.

Adaptability

Adaptability as it applies to job analysis can refer to the extent to which the results of an analysis are adaptable or useful in other contexts. Generally, procedures that are narrative and subjective are low in adaptability. Structured instruments tend to be high in adaptability, but only if structures correspond or if the same instrument is administered in the different contexts.

JOB ANALYSIS METHODS

Five job analysis techniques/methods suited for selection-oriented job analysis are:
- ➤ Critical Incident
- ➤ Job Element
- ➤ Structured Interview
- ➤ Task Inventory
- ➤ Total Competency

These methods are used for several reasons. First, they have no predefined set of factors so they allow for more flexibility than a predetermined factor structure. Second, these methods cover a range of needs in doing job analyses. They differ in reliability, validity, required documentation, required resources and required time. A more thorough job analysis produces a higher quality of reliability, validity and documentation. Table 1 - Job Analysis Methods provides an overview of each method, the resources needed and advantages and disadvantages of the five methods.

OBJECTIVES OF SELECTION-ORIENTED JOB ANALYSIS

Validity

The five commonly used job analysis methods are intended to form the basis of a content validity strategy. An examination can claim content validity if the domain of job performance is adequately sampled by the examination. The job analysis should focus on the relevant performance domain, which differentiates superior from barely acceptable workers, so that the detailed description of the domain can be used to develop a content valid selection device.

Defensibility

Documentation is the key to defensibility so the analysis should provide as much documentation as is practical given the demands for validity and the limitations of time and resources. Reliability also contributes to the defensibility of a job analysis.

Minimizing Time & Resources

Minimizing administrative time and resources should always be a consideration. This consideration will limit the other two objectives. In general, the more time and resources that are devoted to the job analysis, the more valid and defensible the resulting examination will be.

SELECTING A JOB ANALYSIS METHOD

Choosing a job analysis method for development of any particular examination is not simple. It requires a great deal of professional judgment and analysis. The following provides a summary of the points that need to be considered in selecting a job analysis technique (for more details about each step refer to the Job Analysis Manual published by the Division of Human Resources of the Department of Personnel & Administration):

     Step 1   *The Required Level of Validity and Defensibility of the Exam*

     Step 2   *The Development Time and Resources*

     Step 3   *The Administrative Time and Resource Level of the Examination*

     Step 4   *Preliminary Identification of* Competencies

     Step 5   *Preliminary Examination Plan*

     Step 6   *Select Job Analysis Technique*

PREPARING FOR JOB ANALYSIS

There are a number of functions that may be completed prior to doing the actual job analysis. By investing time in planning and preparing for the job analysis, completion of the actual job analysis will take less time and effort.

Subject Matter Expert (SME)
The subject matter expert(s) should be identified, invited and agree to participate in the job analysis. One individual or a number of individuals may be identified. Generally the HR professional will work with one or two SMEs, probably the supervisor and/or incumbent, when developing an examination to fill a specific position(s) in a work unit. If the job analysis will be used to develop an examination for system-wide use, SMEs from a number of agencies should be included.

To assist the SME(s) in preparing for the job analysis, you may wish to provide a copy of the Hiring Guide for Managers Of The State of Colorado Personnel System and other relevant documents for review.

Literature Review
A literature review is a review of existing documents related to the position/class for which the job analysis is being conducted. Documents you may wish to review/include:
- Class description (CD) - provides a quick overview of the class and indicates further job analysis needs for examination construction.
- Position description questionnaire (PDQ) - provides detailed information about the specific job.
- Existing job analyses, job profiles, and examinations - assist in making preliminary decisions about the exam plan and job analysis approaches.
- Task inventories (e.g., Human Resource Manager) - provides list of tasks and competencies which may be used as a starting point for developing task statements and identifying

competencies during the job analysis.

- ➢ Performance plans and performance reviews of current and previous occupants of the position - provides information about the performance domain which is the ultimate criterion for any selection device.

DOCUMENTATION

The amount and extent of the documentation produced for a job analysis depends on the method used. The Uniform Guidelines on Employee Selection provide a detailed discussion related to validation strategies and their documentation, which in turn impact job analysis. Section 15C(3) identifies what should be included in job analysis documentation. Listed below are the key elements which should be included in the documentation regardless of the method:

- ➢ A description of the job analysis method used
- ➢ The work behavior(s), associated tasks, and if the behavior results in a work product, a complete description of the work product
- ➢ Measures of criticality and/or importance of the work behavior(s)
- ➢ Method used to determine measures of criticality
- ➢ Where knowledges, skills, and abilities used in work behavior(s) have been identified, an operational definition for each knowledge in terms of a body of learned information and for each skill and ability in terms of observable behaviors and outcomes
- ➢ The relationship between each knowledge, skill, or ability and each work behavior and the method used to determine this relationship
- ➢ The complexity and difficulty of the knowledge, skill, or ability as used in the work behavior(s)
- ➢ A description of the work situation that includes the setting in which the work behavior(s) are performed, and where appropriate, the manner in which knowledges, skills, or abilities are used.
- ➢ A completed SME Information Sheet for each SME that participated in the process.

REFERENCES

AHow to Prepare and Conduct Job Element Examinations≅, Primoff, 1975.

AHigh-Impact Hiring≅, Joseph Rosse, Robert Levin, 1997

AUniform Guidelines on Employee Selection Procedures≅, Federal Register, Vol. 43, No. 166, August 25, 1978.

TABLE 1 - JOB ANALYSIS METHODS

METHOD	RESOURCES	ADVANTAGES	DISADVANTAGES
CRITICAL INCIDENTS[1] - incidents of good and poor performance are collected from Subject Matter Experts (SMEs). Reported verbatim, analyzed according to one set or another of classification criteria, or summarized and used to develop examinations.	TIME: 4-6 days of SME time & HR Professional - 15-25 incidents per SME/day - need several hundred critical incidents - estimate 5 SME = 100 incidents/day 3-4 days to analyze, write and process results MATERIALS: Flip chart, pad, marking pens, masking tape, forms to collect critical incidents, paper & pencils and SME Identification Sheets	➤ Data are primary examples of on-the-job behavior. ➤ No abstraction or subjective selection of elements from the job analysis to the job ➤ Technique details critical behaviors that can make or break an individual or organization	➤ Less structured in administration and analysis than other techniques (may be an advantage for creative, experienced professionals but can be problematic for beginner) ➤ Mass narrative data does not lend itself to quantitative analysis ➤ Time-consuming classification procedure to define factors ➤ Resources (people-hours) needed are substantial due to large number of critical incidents needed
JOB ELEMENT[2] (Ajury of experts≅ approach) – SMEs in a panel list and rate the job elements of the class(job)	TIME: 16 hours - Human Resources Professional 10 hours - Panel 4 hours - word processing MATERIALS: Flip chart, pad, marking pens, masking tape, Job Elements blanks, paper & pencils and SME Identification Sheets DATA PROCESSING- program development and processing time	➤ Well defined - Requires less interpretation than other methods - close to a cookbook job analysis method that meets professional standards ➤ HR Professional role mainly as group facilitator ➤ Relatively efficient - maximum of two days to produce a complete job analysis ➤ Relatively small number of people involved in the job analysis ➤ Documentation from this method is very complete and well organized ➤ SMEs involved in every stage of job analysis and feel ownership of examination process	➤ Job Elements methodology is difficult to communicate (results lack universal definition) ➤ Normal documentation not specific about some factors definitions
STRUCTURED INTERVIEW - an oral questionnaire. SME(s) give information verbally in a face-to-face interview. Ideal for position examinations or low use class examinations where reliability is limited by a small number of SMEs.	TIME: 1 - 2 days which includes identifying and scheduling SME(s) for interview, gathering background information, structuring interview, carrying out interview, documentation and follow-up questions MATERIALS: Form to collect responses and/or tape recorder if recording interview	➤ Quick turnaround time ➤ Minimal time and resources ➤ Less planning and is more flexible to apply when examination must be developed rapidly	➤ Time-consuming if many SMEs are used ➤ Most difficult to employ successfully ➤ Danger of interviewer bias - requires experienced job professional ➤ Reliability not as high as the more time-consuming methods ➤ Validity of method can be problem if interview not focused on differences between superior and barely acceptable workers.

METHOD	RESOURCES	ADVANTAGES	DISADVANTAGES
TASK INVENTORY – list of tasks which are evaluated on dimensions relevant for selection or other purposes. Task statements are normally grouped under duties which describe a major work function. Range from 200 – 600 tasks when used for other than selection, but 50 - 200 tasks are normally adequate to develop selection instruments for a single class.	TIME: Modified approach - 1 - 3 weeks, depending on diversity of class and availability of quality tasks and duty statements. Less time if SME panel can be used. MATERIALS: Flip chart, pad, marking pens, masking tape, Job Elements blanks, paper & pencils and SME Identification Sheets	➢ Objectivity ➢ Reliable description of job or class of work when fully utilized ➢ A description of work being done which is used to provide a complete description for classification purposes ➢ Tasks can be used directly as items when developing checklist ratings of training and experience, which enhances defensibility and minimizes time to develop examination from completed job analysis	➢ Limited for selection use - does not focus on worker characteristics which differentiate superior workers from barely acceptable workers ➢ Time consuming when fully utilized ➢ Validity of resulting examination may suffer because tasks are discrete units of work which do not adequately cover the relevant performance domain ➢ Important non-routine, non-discrete behaviors may not be reflected in task statements ➢ For tests other than Checklist T&E, KSAPs must be inferred from numerous tasks and importance of any KSAP must be determined considering all tasks in which it is involved.
TOTAL COMPETENCY - a comprehensive job analysis method. ΑThe purpose of a job analysis is to identify the important and frequent tasks performed by job incumbents, and the KSAPs necessary to perform the tasks≅ (Cascio, 1992). Designed to address the 10 primary characteristics that make a job analysis defensible.	TIME: 8 - 16 hours time (which might occur over one - several weeks, depending on the availability of SME group and HR professionals other commitments). MATERIALS: Packet of materials in DATA PROCESSING: Spreadsheet	➢ Defensibility ➢ More cost-effective statewide over time, since subsequent vacancies in same class may be filled by reviewing existing job analysis with SMEs and updating as needed, rather than conducting a complete new job analysis each time the class is filled. ➢ Links competencies to tasks in manner that makes link evident to reader ➢ Long-range benefits of not having to do full-blown job analysis each time a vacancy occurs	➢ Investment of time and effort. Difficult to convince an appointing authority of long term investment if position needs to be filled immediately ➢ Tedious to produce all the calculations and documentation if no access to PC for production stage.

[1]Critical Incidents are defined as Αextreme behavior either outstandingly effective or ineffective with respect to attaining the aims of the activity≅. (Flanagan, 1954)

[2]Job Element is defined as, ΑA worker characteristic which influences success in a job, including combinations of abilities, skills, knowledges, or personal characteristics.≅ (Primoff, 1975).